USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

Plant Fact Sheet

DEERGRASS
Muhlenbergia rigens (Benth.) A.S. Hitchc.

Plant Symbol = MURI2

Contributed by: USDA NRCS Plant Materials Program

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Uses

In California, dense patches of deergrass provide cover during the fawning period of mule deer (*Odocoileus hemionus*) in mountain meadows and grassland openings. The younger palatable tufts are grazed by deer, horses, and cattle and can remain palatable if continually grazed. It is particularly sought for forage by animals when first resprouting after a burn. Older tufts are poor feed for livestock. The seeds provide food for songbirds and probably other birds as well. In sunny openings where deergrass occurs, it forms a larval food plant for one of the Satyrid butterflies, the California ringlet *(Coenonympha california)* and for the umber skipper *(Poanes melane).* Massive numbers of ladybugs overwinter in deergrass clumps. Deergrass is a valuable streambank stabilizer, as it has an extensive root system, and if grown in dense enough colonies, it can be an effective weed suppresser. In California, Pacific Gas and Electric is experimenting with growing it in dense colonies under powerline corridors. Its long, slender culms (stems) and tall tufts make it an attractive plant for the garden.

Deergrass is a significant species to central and southern California Native Americans who utilize the flower stalks in the foundations of coiled baskets. Frequently, thousands of flower stalks are needed for completion of each basket. Culms are gathered in late spring while still green, or summer or early fall when golden brown depending upon the tribe, individual family preference, and elevation of the deergrass site.

Status

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status (e.g. threatened or endangered species, state noxious status, and wetland indicator values).

Description

Muhlenbergia rigens (Benth.) A.S. Hitchc., deergrass, is a perennial bunchgrass reaching heights of 5 feet when in bloom. It is part of the largest genus of warm season grasses in North America. The bunchgrass is found in dense, large clumps, but can occur as a continuous cover in areas that are subjected to light or frequent ground fires. The culms are slender, narrow, and spike-like, 3 to 4 feet in length and less than 1/2 inch wide. The numerous, small spikelets each have one flower. The ligule (where the leaf blade meets the stem) is firm and blunt, 1/8 inch long. The leaves are 1/16 to 5/16 inch wide. The seeds are small, requiring about 2.5 million to make one pound. The dense, basal foliage is tufted and these large tufts, up to 6 feet across, are a distinguishing feature of the grass, along with the whip-like flower stalks.

Adaptation and Distribution

It is found on sandy or gravely well-drained soils in scattered colonies in dry or damp places below 7,000 feet elevation from Shasta County in northern California south, extending into New Mexico, Texas, and Mexico. Deergrass can withstand periodic flooding, but it cannot tolerate poorly-drained soils.

The major plant communities it inhabits include valley grasslands, streamsides, and meadows. Additionally, deergrass is shade-intolerant and occurs in grassland openings within chaparral, mixed conifer forests, and oak woodland plant communities, maintained with human-set or lightning fires. On most soil types, these grassland areas quickly revert

to the surrounding dominant vegetation type without human or natural disturbance.

For a current distribution map, please consult the Plant Profile page for this species on the PLANTS Website.

Establishment
Broadcast seeding: In California and the Southwest, deergrass can be broadcast seeded in the late spring or summer during the months of May, June, July, and August, with irrigation. The seeds are tiny and should be broadcast on top of the ground, and then run over with a ring roller or a culti-packer to compress the seeds slightly below the soil surface. For best results, sow at least 4 pounds of PLS (pure live seed) per acre, which amounts to 50 seeds per square foot. Deergrass is slow-growing and germination rates can vary from 2 weeks up to 2 months. Fertilization of deergrass is not recommended, as it usually gives weeds a competitive edge. Site preparation is extremely important for good establishment of deergrass. Both repetitive tillage and burning are recommended to drastically curtail weed competition. Repetitive tillage involves loosening the soil, irrigating, and cultivating the area with a disc harrow, following with a ring roller to kill the flush of annual weeds. This is done several times prior to seeding to reduce the weed seedbank. Burning involves setting fire to all residual dry matter prior to seeding.

Container planting: Container planting is a more effective and less time consuming way of establishing deergrass, but it is more costly than seeding on a large scale. Deergrass seed can be sown into flats, seedling plug trays, or reforestation tubes in May. Plants can be planted out from containers in the fall of the same year in soil that has been moistened with the first rains, using standard planting procedures. Plants can also be sown in the fall in flats or containers and planted out the next summer or fall in the designated area. Plants should be spaced at a minimum width of 24 inches. Irrigating is not necessary if it is a normal rainfall year. Site preparation is the same as for the section under broadcasting seed. Larger bunchgrasses can also be divided in winter or early spring and transplanted. A good stand of deergrass can be established in 1½ years by container planting. It is thought that container planting with grown plugs is more effective in establishing deergrass than by seed.

Management
Once established, deergrass is quite drought-tolerant. To maintain its vigor and reduce accumulated dead material, deergrass can be mowed or burned every several years. Burning or mowing should be in the fall, after it has gone to seed. Many tribes historically and probably prehistorically enhanced deergrass populations through firing deergrass stands in the fall in California every 2 to 5 years. Fires set by Native Americans increased flower stalk yields, recycled nutrients, cleared away detritus, and promoted seedling production in the midst of reduced competition from other plants. According to Native American elders, these fires maintained the bunchgrass in greater numbers than would have occurred under natural conditions. Knowledge of past indigenous fire management of deergrass has important implications for mountain meadow habitat management for wildlife and maintenance of grassland openings within shrublands, woodlands, and forests for preservation of indigenous cultural traditions. Some areas could be managed with the dual objectives of indigenous harvesting of flower stalks and grazing after culm harvest.

Pests and Potential Problems
There are several fungi that infect the leaves of deergrass, causing debilitation, but usually not death. These include tar spot *(Phyllachora epicampis)*, two rusts *(Puccinia schedonnardi* and *Uromyces epicampis)*, and stripe smut *(Ustilago striiformis)*. Fire eliminates these pathogens.

Cultivars, Improved, and Selected Materials (and area of origin)
Deergrass plant materials are available from commercial sources.

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For more information about this and other plants, please contact your local NRCS field office or Conservation District, and visit the PLANTS Web site<http://plants.usda.gov> or the Plant Materials Program Web site <http://Plant-Materials.nrcs.usda.gov>

Read about Civil Rights at the Natural Resources Convervation Service.